Communication Protocol

Applicable for software version 800

(1) Support 03 read command, 06/10 write command, Master device with broadcast function when the read/write address is “0”

(2)Interface: Base on standard RS-485

Connection method: 2 wire system, half-duplex multi-drop connection

Communication speed: 2400bps, 4800bps, 9600bps, 19200bps

Data type: Start bit: 1

Data bit: 8

Parity bit: None/Uneven/Even selectable

Stop bit: 1

Protocol: Modbus-RTU RS-485

2: Parameter and address list

Name	algorism	Hex	Range	Read	Decimal point
PV Process value	0	0000H	-19999~99999（9999.9 degree）	R	Temp display=1
MV1 Output1 PID indication %	1	0001H	0-1000 （0-100.0%）	R	1
MV2 Output2 PID indication %%	2	0002H	0-1000 （0-100.0%）	R	1
MVFB position feedback indication%	3	0003H	0-1000 （0-100.0%）	R	1
Output LED indication	4	0004H	Refer to remark 1 for details	R	0
SV Setting value	5	0005H	-19999-99999 (9999.9 degree)	R/W	Temp display=1
S.F00 ， shortcut definition for SV	6	0006H	0：shortcut key on the panel 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
SV1，event input SV1	7	0007H	-19999~9999（9999.9 degree）	R/W	Temp display=1
SV2，event input SV2	8	0008H	-19999~9999（9999.9 degree）	R/W	Temp display=1
SV3，event input SV3	9	0009H	-19999~99999（9999.9 degree）	R/W	Temp display=1
SV4，event input SV4	10	000AH	-19999~99999（9999.9 degree）	R/W	Temp display=1
S.F01，F01 parameter group shortcut	11	000BH	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0

AT Auto-tuning	12	000CH	0：Auto-tuning off 1：Auto-tuning on	R/W	0
AM.RS Control mode selection	13	000DH	0：PID control 1：Manual control 2：STOP 5：End status	R/W	0
AL1 alarm 1 value	14	000EH	-19999~99999（9999.9 degree）	R/W	Temp display=1
AL2 alarm two value	15	000FH	-19999~99999（9999.9 degree）	R/W	Temp display=1
Spare , reserved for future use	16	0010H			
UAd device address	17	0011H	0-255	R	0
S.F02，F02 parameter group shortcut	18	0012H	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
Spare , reserved for future use	19	0013H			
RAMP ramp up rate	20	0014H	0-9999(0.0~999.9 degree/minute)	R/W	1
T1 soak time	21	0015H	0-9999 second or minutes	R/W	0
S.F03，F03 parameter group shortcut	22	0016H	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
SC input offset	23	0017H	-1999~9999（999.9 degree）	R/W	Temp display=1
P1 for group 1 PID,P VALUE	24	0018H	0-8000（0.0-800.0 degree）	R/W	Temp display=1
I1 for group 1 PID, I VALUE	25	0019H	0-3600（seconds）	R/W	0
D1 for group 1 PID D VALU	26	001AH	0-3600（seconds）	R/W	0
Built-in timer display	27	001BH	0-9999	R	0
ATVL auto-tuning reset windup	28	001CH	-19999~99999（9999.9 degree）	R/W	Temp display=1
CYT1 Cycle time for #1 PID group	29	001DH	0-100（second）	R/W	0
HYS1 for #1 PID group	30	001EH	1~9000（0.1~900.0 degree）	R/W	Temp display=1

rSt1 for #1 PID group	31	001FH	-1999~1999（199.9 degree）	R/W	Temp display=1
OPL1 Output lower limit for #1 PID group	32	0020H	0-1000 （0-100.0%）	R/W	1
OPH1 Output higher limit for #1 PID group	33	0021H	0-1000 （0-100.0%）	R/W	1
bUF1 soft-start for #1 group PID group	34	0022H	0-1000 （0-100.0%）	R/W	1
PKo1 output rate for manual output after power on	35	0023H	0-1000 （0-100.0%）	R/W	1
reserved	36	0024H			
OLAP overlap area for heating+cooling mode	37	0025H	0~1000（0.0~100.0 degree）	R/W	Temp display=1
GAP2 offset for SV of cooling side	38	0026H	0-2000（0.0~200.0 degree）	R/W	Temp display=1
P2 for group 2 PID,P VALUE	39	0027H	0-8000（0.0-800.0 degree）	R/W	Temp display=1
I2 for group 2 PID, I VALUE	40	0028H	0-3600（second）	R/W	0
D2 for group 2 PID D VALU	41	0029H	0-3600（second）	R/W	0
Manual output rate	42	002AH	0-1000 （0-100.0%）	R/W	1
CYT2 Cycle time for #2 PID group	43	002BH	0-100（second）	R/W	0
HYS2 for #1 PID group	44	002CH	1~9000（0.1~900.0 degree）	R/W	Temp display=1
rSt2 for #1 PID group	45	002DH	-1999~1999（199.9 degree）	R/W	Temp display=1
OPL2 Output lower limit for #2 PID group	46	002EH	0-1000 （0-100.0%）	R/W	1
OPH2 Output higher limit for #2 PID group	47	002FH	0-1000 （0-100.0%）	R/W	1
reserved	48	0030H			
S.F04，F04 parameter shortcut group	49	0031H	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
SFSV SV for soft-start procedure	50	0032H	-1999~32750 (3275.0 degree)	R/W	Temp display=1
STME soft-start effective time	51	0033H	0-100 minute	R/W	0

SOUT Soft-start output ratio	52	0034H	0-1000 （0-100.0%）	R/W	1
S.F05 ， F05 parameter group shortcut	53	0035H	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
LBAt loop break alarm checking time	54	0036H	0-9999 seconds	R/W	0
LBAB look break alarm temperature value	55	0037H	0-99999（9999.9 degree）	R/W	Temp display=1
HBAt loop short circuit alarm checking time	56	0038H	0-9999 second	R/W	0
HBAB look short circuit alarm temperature value	57	0039H	0-99999（9999.9 degree）	R/W	Temp display=1
S.F06，F06 parameter group shortcut	58	003AH	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
1LR alarm lock-in for alarm 1	59	003BH	=0 lock-in defused	R/W	0
2LR alarm lock-in for alarm 2	60	003CH	=0 lock-in defused	R/W	0
reserved	61	003DH			
S.F07，F07 parameter group shortcut	62	003EH	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
LCK Access protection	63	003FH	0~8	R/W	0
S.F08，F08 parameter group shortcut	64	0040H	0：Without shortcut 1：located in menu 1 2：located in menu 2 3：located in menu 3	R/W	0
INP1 Input signal selection	65	0041H	See remark 2	R/W	0
dP Decimal point display	66	0042H	Decimal point：0，1 Analog：0~3	R/W	0
Unit display unit selection	67	0043H	0：Celcius 1：Fahrenheit 2：without unit	R/W	0
LSPL SV lower limit	68	0044H	-19999~99999（9999.9 degree）	R/W	Temp display=1
USPL SV higher limit	69	0045H	-19999~99999(9999.9 degree）	R/W	Temp display=1

PVoS input offset, same as SC	70	0046H	-1999~9999（999.9 degree）	R/W	Temp display=1
PVFt input filter strength	71	0047H	0-60	R/W	0
ANL1 lower limit display for analog input	72	0048H	-1999~9999	R/W	Refer to dP
ANH1 higher limit display for analog input	73	0049H	-1999~9999	R/W	Refer to dP
tRSL display for re-transmission lower limit value	74	004AH	-19999~99999（9999.9 degree）	R/W	Temp display=1
tRSH display for re-transmission higher limit value	75	004BH	-19999~99999（9999.9 degree）	R/W	Temp display=1
ALd1 alarm 1 mode	76	004CH	0-23	R/W	0
AH1 alarm 1 hysteresis	77	004DH	0-99999（9999.9 degree）	R/W	Temp display=1
ALt1 alarm 1 output delay time	78	004EH	0-9999 second	R/W	0
ALd2 alarm 2 mode	79	004FH	0-23	R/W	0
AH2 alarm 2 hysteresis	80	0050H	0-99999（9999.9 degree）	R/W	Temp display=1
Alt2 alarm 2 output delay time	81	0051H	0-9999 second	R/W	0
reserved	82	0052H			
reserved	83	0053H			
reserved	84	0054H			
Oud1output mode (heating/cooling) selection	85	0055H	0：reverse action(heating) 1：direct action（cooling）	R/W	0
bER1analog output soft-start mode	86	0056H	0:no buffer 1: buffer on all the time 2:buffer on when analog increase	R/W	0
reserved	87	0057H			
RUCY motor travel time	88	0058H	0-200 second	R/W	0
reserved	89	0059H			
reserved	90	005AH			

PMd program running mode	91	005BH	0：standard mode 1：temperature constant mode 2：Ramp up mode	R/W	0
tSP timer kick-in temperature	92	005CH	0-99999（9999.9 degree）	R/W	Temp display=1
PEND running mode after timer finish timing	93	005DH	0：program END after timer finish 1：PID continue work after timer finish	R/W	0
Idno address	94	005EH	0-255	R/W	0
bAUd baud rate	95	005FH	0：2400bps 1：4800bps 2：9600bps 3：19200bps	R/W	0
Ucr Parity bit	96	0060H	0：No parity(8N1) 1：Odd parity(8O1) 2：Even number parity (8E1)	R/W	0
EXC1 select relay status when alarm is on	97	0061H	0：Alarm ON, relay on 1：Alarm off, Relay NC	R/W	0
A1L1 alarm 1 lock-in selection	98	0062H	0：no alarm lock-in 1：alarm lock-in	R/W	0
EXC2 select relay status when alarm is on	99	0063H	0：Alarm ON, relay on 1：Alarm off, Relay NC	R/W	0
A1L2 alarm 2 lock-in selection	100	0064H	0：no alarm lock-in 1：alarm lock-in	R/W	0
reserved	101	0065H			
reserved	102	0066H			
KA/M Auto/manual switch	103	0067H	0：No shortcut key 1：Use A/M key	R/W	0
KR/S Run/stop switch	104	0068H	0：no shortcut key 1：use F1 to quick switch between RUN/STOP	R/W	0
KATU Auto-tuning shortcut	105	0069H	0：No shortcut key 1：Use F3 as shortcut key	R/W	0

PWON controller running mode after power on	106	006AH	0：PID mode 1：Manual mode 2：Stop mode 3：inherit from the mode before power off	R/W	0
SFST soft-start function	107	006BH	0： soft-start off 1：Soft-start on	R/W	0
tRS PV/SV re-transmission function	108	006CH	0：PV re-transmission 1：SV re-transmission	R/W	0
PFbK Position feedback configuration	109	006DH	0：no position feedback 1：with position feedback	R/W	0
RESV Remote-SV configuration	110	006EH	0：SV panel set 1：remote SV, panel set disabled 2：Remote SV, panel set switchable	R/W	0
MONI SV window display contents configuration	111	006FH	0：no display MV1,MV2,MVFb 1: only display MV1，MV2 2: only display MVFb 3: display MV1,MV2,MVFb	R/W	0
bEAM bar graphic display configuration	112	0070H	0：indication for MV1% 1：indication for MV2% 2indication for re-transmission% 3：indication for MVFb%	R/W	0
T1UN Timer unit, minutes or seconds	113	0071H	0：second 1：minute	R/W	0
REMS manual output ration	114	0072H	0：manual output defined via panel 1：manual output ration remote setting	R/W	0

*Remark 1 ：Panel indicators Address 0004H

bit0: COM bit1:MAN bit2:AL3 bit3: AL2

bit4:AL1 bit5:AT bit6:OUT2 bit7:OUT1

bit8: PRG bit9：SV4 bit10:SV3 bit11:SV2

bit12：SV1 bit13: C bit14：F bit15：%

=0 ON， =1 OFF

*Remark 2：Input signal selection INP1

Details as below：

INP1=	Input signal
0	K
1	E
2	J
3	N
4	Wu3/Re25
5	S
6	T
7	R
8	B
9	AN1 analog signal
10	AN2 analog signal
11	F3 reserved for future use
12	F4 reserved for future use
13	Pt100